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## Definitions and Economic Assumptions

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## I Definition of Terms

### A

#### Overall Definitions and Analytical Framework

**Information Services** - Computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Processing of specific applications using vendor-provided systems (called **Processing Services**)
- A combination of hardware, packaged software and associated support services which will meet a specific application processing need (called **Turnkey Systems**)
- Packaged software (called **Software Products**)
- People services that support users in developing and operating their own information systems (called **Professional Services**)
- Bundled combinations of products and services where the vendor assumes responsibility for the development of a custom solution to an information system problem (called **Systems Integration**)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called **Systems Operations**)
- Services associated with the delivery of information in electronic form-typically network-oriented services such as value-added networks, electronic mail and document interchange, on-line data bases, on-line news and data feeds, videotex, etc. (called **Network Services**)

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is bundled as part of an overall service offering such as a turnkey system, a systems operations contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., EDI or VAN services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the **Information Services Industry** consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels, and competitive issues.

All **Information Services Market** forecasts are estimates of **User Expenditures** for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorized according to what users perceive they are buying.



By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for re-packaging and resale to end users)
- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers

**Market Sectors** or markets, are groupings or categories of the users who purchase information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc.
- *Functional Application* markets, such as Human Resources, Accounting, etc. These are also called "Cross-Industry" markets.
- *Generic* markets, which are neither industry- nor application-specific, such as the market for systems software.

Specific market sectors used by INPUT are defined in Section D, below.

**Captive Information Services User Expenditures** are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

**Non-captive Information Services User Expenditures** are expenditures that go to vendors which have a different parent corporation than the user. It is these expenditures which constitute the information services market.

**Delivery Modes** are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the eight delivery modes defined by INPUT, five are considered primary products or services:

- *Processing Services*
- *Network Services*
- *Professional Services*
- *Applications Software Products*
- *Systems Software Products*

The remaining three delivery modes represent combinations of these products and services, bundled together with equipment, management and/or other services:

- *Turnkey Systems*
- *Systems Operations*
- *Systems Integration*

Section B describes the delivery modes and their structure in more detail.

**Outsourcing** is defined as the contracting of information systems (IS) functions to outside vendors. Outsourcing should be viewed as the opposite of *insourcing*: anything that IS management has considered feasible to do internally (e.g., data centre operations, applications development and maintenance, network management, training, etc.) is a potential candidate for outsourcing.

IS has always bought systems software, as it is infeasible for companies to develop it internally. However, all other delivery modes represent functions or products that IS management could choose to perform or develop in-house. Viewed this way, outsourcing is the result of a make-or-buy decision, and the outsourcing market covers any product or service where the vendor must compete against the client firm's own internal resources.

## B Industry Structure and Delivery Modes

### 1. Service Categories

The following Exhibit I-1 presents the structure of the information services industry. Several of the delivery modes can be grouped into higher-level **Service Categories**, based on the kind of problem the user needs to solve. These categories are:

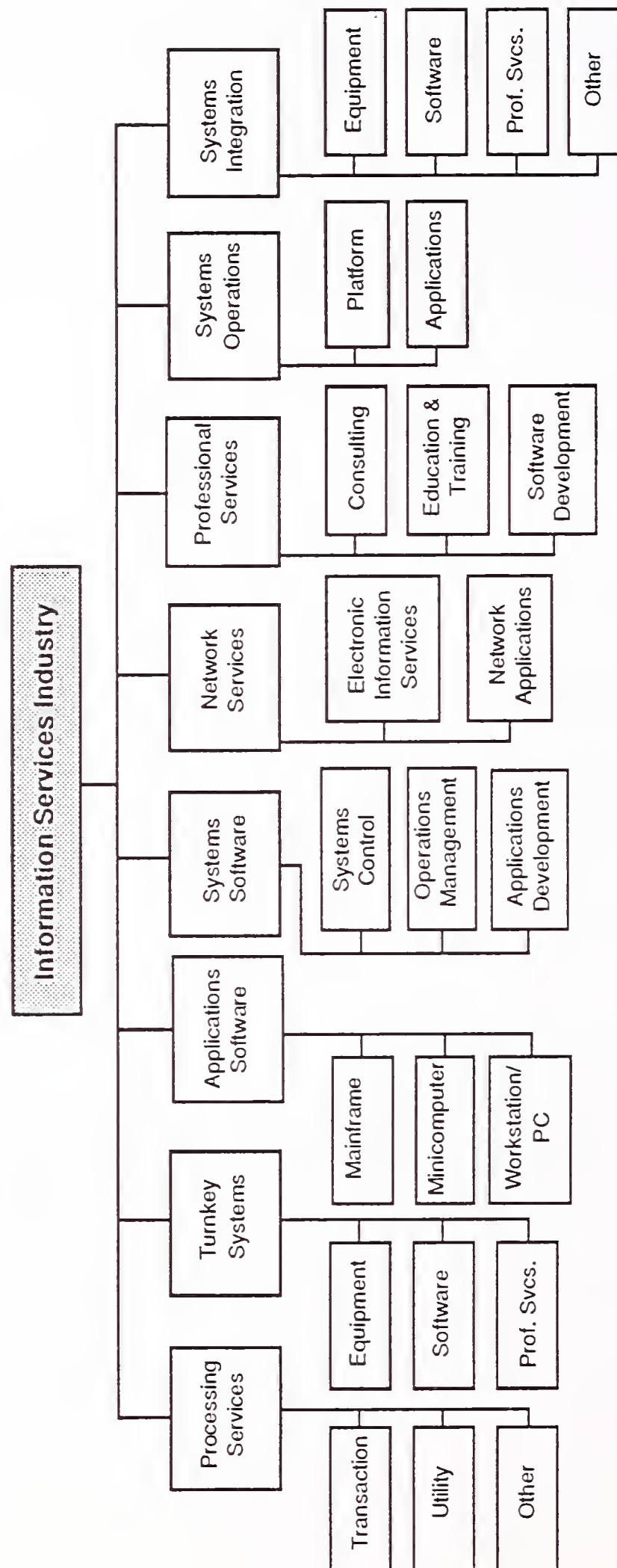
- **Business Application Solutions (BAS)** - prepackaged or standard solutions to common business applications. These applications can be either industry-specific (e.g., mortgage loan processing for a bank), cross-industry (e.g., payroll processing), or generic (e.g., utility timesharing). In general, BAS services involve minimal customization by the vendor, and allow the user to handle a specific business application without having to develop or acquire a custom system or system resources. The following delivery modes are included under BAS:
  - *Processing Services*
  - *Applications Software Products*
  - *Turnkey Systems*
- **Systems Management Services (SMS)** - services which assist users in developing systems or operating/managing the information systems function. Two key elements of SMS are the customization of the service to each individual user and/or project, and the potential for the vendor to assume significant responsibility for management of at least a portion of the user's information systems function. The following delivery modes are included under SMS (research on these sectors is published in the Systems Management Programme):
  - *Systems Operations*
  - *Systems Integration*

Each of the remaining three delivery modes represents a separate service category:

- *Professional Services*
- *Network Services*
- *System Software Products*

Exhibit I-1

## Information Services Industry Structure—1991



Source: INPUT



## 2. Software Products

There are many similarities between the applications and systems software delivery modes. Both involve user purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if bundled in the software pricing, is also included here.

Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. Fees for work related to education, consulting, and/or custom modification of software products are counted as professional services, provided such fees are charged separately from the price of the software product itself.

### • Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. These products include:

- *Systems Control Products* - Software programs that function during application program execution to manage computer system resources and control the execution of the application program. These products include operating systems, emulators, network control, library control, windowing, access control, and spoolers.
- *Operations Management Tools* - Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities, and capacity management.
- *Applications Development Tools* - Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, data base management systems, report writers, project control systems, CASE systems and other development productivity aids. Also included are system utilities (e.g., sorts) which are directly invoked by an applications program.

### • Application Software Products

- *Industry-Specific Application Software Products* - Software products that perform functions related to solving business or organizational needs unique to a specific vertical market and sold to that market only. Examples include demand deposit accounting, MRPII, medical recordkeeping, automobile dealer parts inventory, etc.
- *Cross-Industry Application Software Products* - Software products that perform a specific function that is applicable to a wide range of industry sectors. Applications include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

### 3. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged or custom application software into a single system developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and support services provided. Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilize standard computers and do not include specialized hardware such as word processors, cash registers, process control systems, or embedded computer systems for military applications.

Hardware vendors that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

- *Value-Added Reseller (VAR)*: A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually application software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services.

Turnkey systems are divided into two categories.

- *Industry-Specific Systems* - systems that serve a specific function for a given industry sector, such as automobile dealer parts inventory, medical recordkeeping, or discrete manufacturing control systems.
- *Cross-Industry Systems* - systems that provide a specific function that is applicable to a wide range of industry sectors, such as financial planning systems, payroll systems, or personnel management systems.

### 4. Processing Services

This category includes transaction processing, utility processing, and other processing services.

- *Transaction Processing*: - Client uses vendor-provided information systems-including hardware, software and/or data networks-at vendor site or customer site, to process transactions and update client data bases. Transactions may be entered in one of four modes:
  - *Interactive* - Characterized by the interaction of the user with the system for data entry, transaction processing, problem solving and report preparation: the user is on-line to the programs/files stored on the vendor's system.
  - *Remote Batch* - Where the user transmits batches of transaction data to the vendor's system, allowing the vendor to schedule job execution according to overall client priorities and resource requirements.
  - *Distributed Services* - Where users maintain portions of an application data base and enter or process some transaction data at their own site, while also being connected through



communications networks to the vendor's central systems for processing other parts of the application.

- *Carry-in Batch* - Where users physically deliver work to a processing services vendor.

- *Utility Processing*: Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), generic applications programs and or data bases, enabling clients to develop their own programs or process data on vendor's system.
- *Other Processing Services*: Vendor provides services-usually at vendor site-such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

## 5. Systems Operations

Systems operations involves the operation and management of all or a significant part of the user's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes:

- *Professional Services*: The vendor provides personnel to operate client-supplied equipment. Prior to 1990, this was a submode of the Professional Services delivery mode.
- *Processing Services*: The vendor provides personnel, equipment and (optionally) facilities. Prior to 1990, this was a submode of the Processing Services delivery mode.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the user's information systems (equipment, networks, systems and/or application software), either at the client's site or the vendor's site. Systems operations can also be referred to as "resource management" or "facilities management."

There are two general levels of systems operations:

- *Platform/network operations* - where the vendor operates the computer system and/or network without taking responsibility for the applications
- *Application operations* - where the vendor takes responsibility for the complete system, including equipment, associated telecommunications networks, and applications software

Note: Systems Operations is a relatively new delivery mode introduced in the 1990 Systems Management Programme - Europe. It was created by taking the Systems Operations submode out of both Processing Services and Professional Services. No other change has been made to the delivery mode definitions, and the total forecast expenditures for these three delivery modes are identical to the total forecast expenditures of the two original modes before the breakout of Systems Operations.

## 6. Systems Integration (SI)

Systems Integration is a business offering that provides a complete solution to an information system, networking or automation requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price.

To be included in the information services market, systems integration projects must involve some application processing component. In addition, the majority of cost must be associated with information systems products and/or services. The SI sector is fully analysed and reported in INPUT's Systems Management Programme.

The systems integrator will perform, or manage others who perform, most or all of the following functions:

- Program management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed systems design and architecture
- System component selection, modification, integration and customization
- Custom software design and development
- Custom hardware design and development
- Systems implementation, including testing, conversion and post-implementation evaluation and tuning
- Life cycle support, including
  - System documentation and user training
  - Systems operations during development
  - Systems maintenance
- Financing

## 7. Professional Services

This category includes consulting, education and training, and software development.

- *Consulting:* Services include management consulting (related to information systems), information systems consulting, feasibility analysis and cost-effectiveness studies, and project management assistance. Services may be related to any aspect of information systems, including equipment, software, networks and systems operations.
- *Education and Training:* Products and services related to information systems and services for the professional and end user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming, and documentation.



- *Software Development*: Services include user requirements definition, systems design, contract programming, documentation and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

## 8. Network Services

Network services typically include a wide variety of network-based functions and operations. Their common thread is that most of these functions could not be performed without network involvement. Network services is divided into two major segments: *Electronic Information Services*, which involve selling information to the user, and *Network Applications*, which involve providing some form of enhanced transport service in support of a user's information processing needs.

- *Electronic Information Services*

Electronic information services are data bases that provide specific information via terminal- or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers. Users typically inquire into and extract information from the data bases. Although users may load extracted data into their own computer systems, the electronic information vendor provides no data processing or manipulation capability and the users cannot update the vendor's data bases.

The two kinds of electronic information services are:

- *On-line Data Bases* - Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.
- *News Services* - Unstructured, primarily textual information on people, companies, events, etc.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

- *Network Applications*

- *Value-Added Network Services (VAN Services)* - VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialized VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.



INPUT's market definition covers VAN services only, but includes the VAN revenues of all types of carriers.

- *Electronic Data Interchange (EDI)* - Application-to-application exchange of standardized business documents between trade partners or facilitators. This exchange is commonly performed using VAN services. Specialized translation software is typically employed to convert data from organizations' internal file formats to EDI interchange standards; this software may be provided as part of the VAN service, or may be resident on the organization's own computers.
- *Electronic Information Exchange (EIE)* - Also known as Electronic Mail (E-Mail), EIE involves the transmission of messages across an electronic network managed by a services vendor, including facsimile transmission (FAX), voice mail, voice messaging, and access to Telex, TWX, and other messaging services. This also includes bulletin board services.
- *Other Network Services* - This segment contains videotex and pure network management services. Videotex is actually more a delivery mode than an application. Its prime focus is on the individual as a consumer or in business. These services provide interactive access to data bases and offer the inquirer the capability to send as well as receive information for such purposes as home shopping, home banking, travel reservations, and more.

Network management services included here must involve the vendor's network and network management systems as well as people. People-only services, or services that involve the management of networks as part of the broader task of managing a user's information processing functions are included in Systems Operations.

Network Services research is fully reported in INPUT's Network Services Programme.

## C

### Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues, and user expenditures. While the primary data for INPUT's research is vendor interviews, INPUT defines and forecasts the information services market in terms of end-user expenditures. End-user expenditures reflect the markup in producer sales when a product such as software is delivered through indirect distribution channels, such as original equipment manufacturers (OEMs), retailers and distributors. The focus on end-user expenditure also eliminates the double counting of revenues which would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., BusinessLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some significant areas of difference. Many microcomputer software products, for example, are marketed through indirect distribution channels. To capture the valued added through these indirect distribution channels, adjustment factors which incorporate industry discount ratios are used to convert estimated information services vendor revenues to end-user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase

software and subcontract the services of other professional services vendors. Turnkey vendors incorporate purchased software into the systems which they sell to end users.

## D

### Sector Definitions and Delivery Mode Reporting

#### 1. Industry Sector Definitions (Vertical Markets)

INPUT has structured the information services market into 16 generic industry sectors, five of these sectors are the subject of specific INPUT research studies. These five sectors are discrete and process manufacturing, distribution, banking and finance and insurance. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) Code system. The specific industries (and their SIC Codes) included under these generic industry sectors are detailed in the following tables.

Sector:	Discrete Manufacturing
SIC Code	Market sub-sector description
23XX	Apparel and other finished products
25XX	Furniture and fixtures
27XX	Printing, publishing and allied industries
31XX	Leather goods
34XX	Fabricated metal products except machines
35XX	Industrial and commercial machines and computer
36XX	Electronic and electrical equipment except computer
37XX	Transportation equipment
38XX	Instruments; photo/med/opt goods; watches/clocks
39XX	Miscellaneous

Sector:	Process Manufacturing
10XX	Metal mining
12XX	Coal mining
13XX	Oil and gas extraction
14XX	Mining non-metallic minerals
20XX	Food products
21XX	Tobacco products
22XX	Textile mill products
24XX	Lumber and wood products except furniture
26XX	Paper and allied products
28XX	Chemicals and allied products
29XX	Petroleum refined and related industries
30XX	Rubber and miscellaneous plastic products
32XX	Stone, clay, glass and concrete products
33XX	Primary metal industries

Sector:	Distribution
SIC Code	Market sub-sector description
50XX	Wholesale trade - durable goods
51XX	Wholesale trade - nondurable goods
52XX	Retail - building materials
53XX	Retail - general merchandise stores
54XX	Retail - food stores
55XX	Retail - automotive dealers, gas stations
56XX	Retail - apparel and accessory stores
57XX	Retail - home furniture, furnishings and accessories
58XX	Retail - eating and drinking places
59XX	Retail - miscellaneous

Sector:	Banking and Finance
60XX	Depository institutions
61XX	Nondepository institutions
62XX	Security and commodity brokers, dealers and exchanges
67XX	Holding and other investment offices



Sector:	Insurance
63XX	Insurance carriers
64XX	Insurance agents,brokers and services
SIC Code	Other Sectors
	Miscellaneous Industries:
01XX	Agricultural production - crops
02XX	Agricultural production - livestock
07XX	Agricultural services
08XX	Forestry
09XX	Fishing, hunting and trapping
15XX	Building construction - general contractors
16XX	Heavy construction - contractors
17XX	Construction - special trade contractors
	Transportation Services:
40XX	Rail transport
41XX	Public transit/transport
42XX	Motor freight transport/warehousing
43XX	Postal services
44XX	Water transportation
45XX	Air transportation except airline reservation
46XX	Pipelines except natural gas
47XX	Transportation services except travel agents
	Utilities:
49XX	Electric, gas and sanitary services
48XX	Telecommunications
80XX	Health services
82XX	Educational services
	Business and Technical Services:
65XX	Real estate
73XX	Business services
81XX	Legal services
87XX	Engineering, accounting, research, management services
89XX	Miscellaneous services
9XXX	Government

	Personal/Consumer Services:
4512X	Airline reservation services
472X	Travel agents
70XX	Hotels, rooming houses, camps and lodgings
72XX	Personal services
7389X	Hotel reservation services
75XX	Automotive repair services and parking
76XX	Miscellaneous repair services
78XX	Motion pictures
79XX	Amusement and recreation services
83XX	Social services
84XX	Museums, art galleries and botanical gardens
86XX	Membership organisations
88XX	Private households



## 2. Cross-Industry Sector Definitions (Horizontal Markets)

In addition to these vertical industry sectors, INPUT has also identified seven cross-industry or horizontal market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc. In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry. The seven cross-industry markets are:

- *Human Resource Systems*
- *Education and Training*
- *Office Systems*
- *Accounting Systems*
- *Engineering and Scientific Applications*
- *Planning and Analysis Systems*
- *Other Applications (including telemarketing, sales management and electronic publishing)*



## II Economic Assumptions

There follow some notes on the methodology INPUT use in making forecasts and judging of how reasonable they are.

INPUT reports are based principally on three strands of research activity conducted throughout the year:

- A vendor research programme with more than 300 interviews with prominent software and services vendors across Europe. This research assesses their attributable revenues in each country by delivery made and, where possible by industry sector. INPUT consultants use their own judgement in many cases to categorise revenues into sub-sectors. In particular INPUT excludes revenues considered captive, such as those from a vendor's parent company.
- Several hundred vendor and user interviews across all European market sectors to determine trends and opinions. These interviews are part of the research that INPUT carries out in specific sectors of the software and services market. In 1990 for example INPUT produced reports on over 20 different software and services market sectors.
- Additionally INPUT maintains an extensive library and data-base of information relating to the software and services industry. This covers for example INPUT's customer services programme data: results of INPUT's research into the hardware maintenance market which includes its diversification into the software and services market.

All the forecasts from these activities are produced in local currency for each country, then consolidated with common economic and exchange rate data to produce a top level forecast. This is done for software and services in each country and in Europe as a whole. At each stage it is examined for reasonableness and consistency and if necessary revisited. For example we satisfactorily tested the question: Will predicted user budgets for information systems support the predicted high growth rates in software and services?

The forecasts also benefit from assignments for and feedback from INPUT clients, who include over 100 of the leading vendors of software and services around the world. For example: INPUT supplied an economic model to a market leading client on the potential effect of rising oil prices on forecast software and services growth rates. In summary this showed that falling real growth was largely counterbalanced by increases in inflation, resulting in continued high dollar growth forecasts for the market.

In order to consolidate INPUT's forecasts and vendor data into a consistent set of European analyses each year, it is essential to use a standard set of economic factors. The following pages show the inflation and exchange rates currently in use.

## A European Exchange Rates

The following table, Exhibit II-1, shows the standard exchange rates used throughout the 1991 programme to consolidate country market data for overall Western European forecasts and vendor market shares.

**Exhibit II-1**  
**US Dollar and ECU Exchange Rates**  
**1991**

Country	Currency	US Dollar Exchange Rate	ECU Exchange Rate
France	FF	5.65	7.74
Germany	DM	1.68	2.30
United Kingdom	£	0.515	0.704
Italy	Lira	1,233.0	1,689.0
Sweden	Sek	5.61	7.69
Denmark	DK	6.39	8.75
Norway	NK	6.49	8.89
Finland	FM	3.96	5.43
Netherlands	Dfl	1.69	2.32
Belgium	BF	34.60	47.40
Switzerland	SF	1.27	1.74
Austria	Sch	11.80	16.17
Spain	Ptas	95.0	130.12
	\$	1	1.37

Source: Barclays Bank (Q4 1990)

Exhibit II-2 shows the standard exchange rates used throughout the 1990 programme to consolidate country market data for overall Western European forecasts and vendor market shares.

**Exhibit II-2**  
**US Dollar and ECU Exchange Rates**  
**1990**

Country	Currency	US Dollar Exchange Rate	ECU Exchange Rate
France	FF	6.17	6.87
Germany	DM	1.81	2.05
United Kingdom	£	0.631	0.74
Italy	Lira	1,336	1,502
Sweden	Sek	6.39	7.41
Denmark	DK	7.05	7.8
Norway	NK	6.85	7.94
Finland	FM	4.21	4.84
Netherlands	Dfl	2.05	2.3
Belgium	BF	38.06	42.29
Switzerland	SF	1.61	1.8
Austria	Sch	12.77	14.39
Spain	Ptas	115.8	129.7
	\$	1	1.20

Sources: Exchange rates - Barclays Bank (1989)



## B

### European Inflation Rates

Exhibit II-3 shows the average five-year inflation assumptions for each reported country and the changes from those used in reports produced in the previous year. All INPUT forecasts include the effects of inflation as well as natural market growth rates. For consistency, the same inflation rates are used throughout all the different market sector research and analysis during a calendar year, unless specified otherwise.

**Exhibit II-3**  
**Inflation Assumptions 1990 and 1991**

Country	Assumption 1990-1995	Assumption 1991-1996	Change
France	4.5	3.0	-1.5
Germany	4	2.7	-1.3
United Kingdom	7	4.8	-2.2
Italy	7	4.4	-2.6
Sweden	7	6.3	-0.7
Denmark	5	2.7	-2.3
Norway	5	4.9	-0.1
Finland	6	5.0	-1.0
Netherlands	3	2.4	-0.6
Belgium	4	3.3	-0.7
Switzerland	5	3.3	-1.7
Austria	4	2.6	-1.3
Spain	6.5	4.7	-1.8
Rest of Europe	10	7.7	-2.5
European Average	5.5	4.0	-1.5

Sources: OECD 1991 Forecast  
IMF 1989

Exhibit II-4 shows the inflation assumptions for both the 1989 and 1990 research programmes.

### Exhibit II-4

#### Inflation Assumptions 1989 and 1990

Country	Assumption 1989-1994	Assumption 1990-1995	Change
France	4	4.5	+0.5
Germany	2.5	4	+1.5
United Kingdom	5.5	7	+1.5
Italy	6	7	+1.0
Sweden	6	7	+1.0
Denmark	6	5	-1.0
Norway	4	5	+1.0
Finland	6	6	0.0
Netherlands	2	3	+1.0
Belgium	3.5	4	+0.5
Switzerland	2.5	5	+2.5
Austria	3	4	+1.0
Spain	5.5	6.5	+1.0
Rest of Europe	8	10	+2.0
European Average	4.5	5.5	+1.0

Source: IMF 1989

